find the sum of

$$\left[\frac{1}{10}+\frac{1}{100}+\frac{1}{1000}+\frac{1}{10^4}+\cdots = \frac{1}{9}\right] \times 10$$

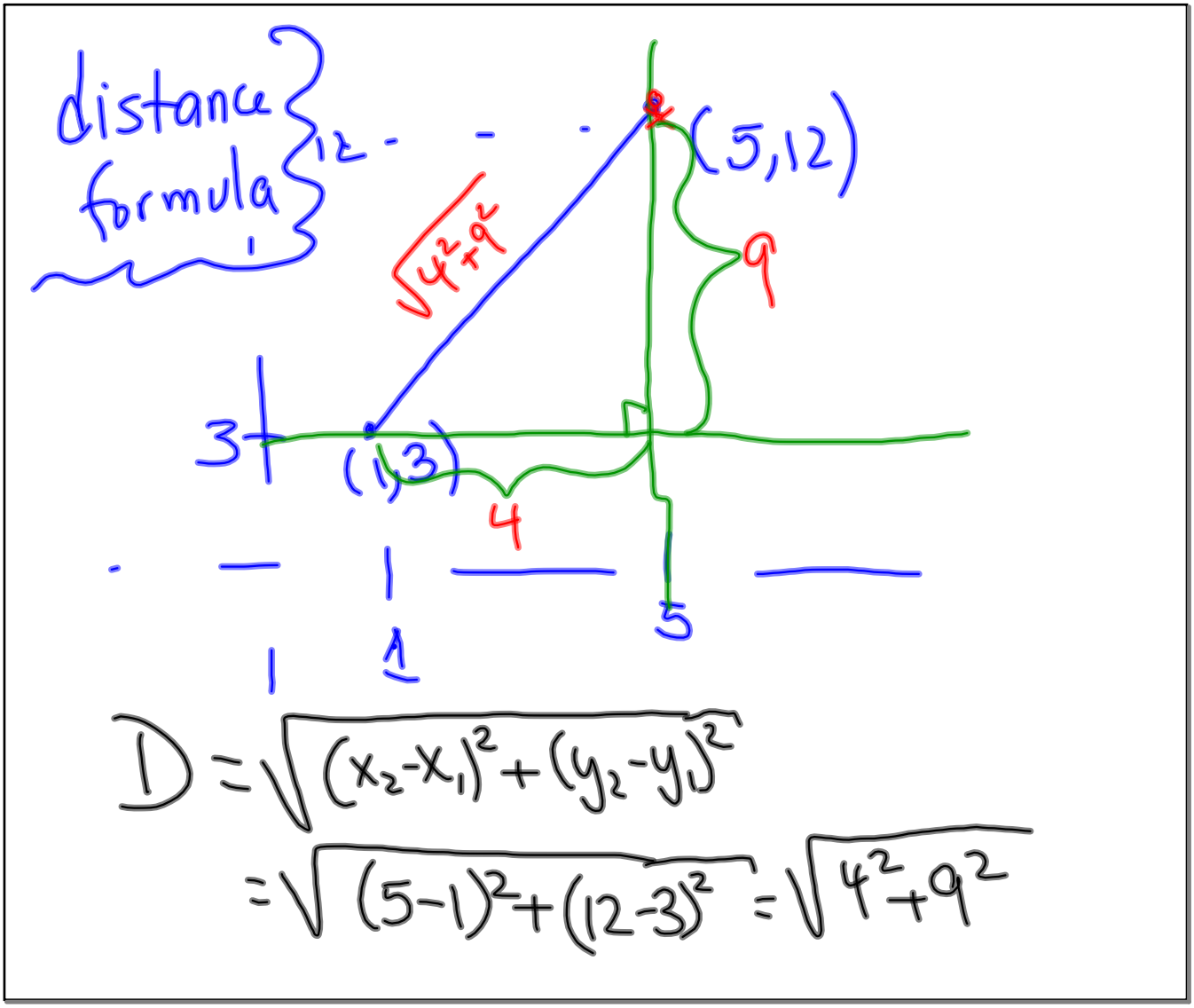
$$-\left(1+\frac{1}{10}+\frac{1}{100}+\frac{1}{1000}+\frac{1}{10000}+\cdots = 10S\right)$$

$$-1 = -9S \quad 14 \text{ nos } 3 \text{ yes.}$$

$$\frac{-1}{-9} = \frac{1}{9} = S$$

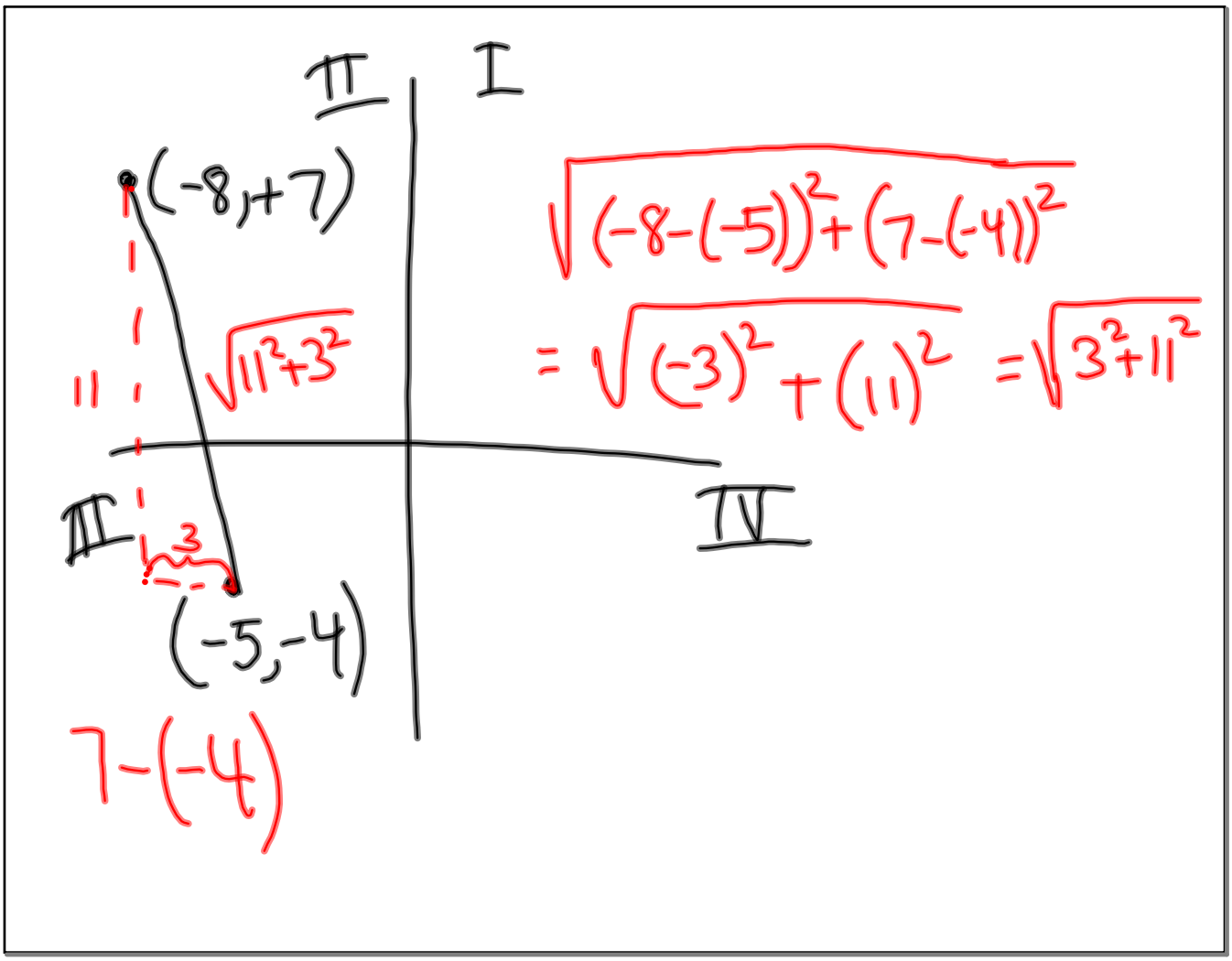
(x_1,y_1) (x_2,y_2)

$$m = \frac{y_2-y_1}{x_2-x_1} = \frac{y_1-y_2}{x_1-x_2} = \frac{-1(y_2-y_1)}{-1(x_2-x_1)}$$



$$D = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$= \sqrt{(5-1)^2+(12-3)^2} = \sqrt{4^2+9^2}$$


II
I
(-8,+7)
11
$\sqrt{11^2+3^2}$
III
3
IV
(-5,-4)
7-(-4)
$\sqrt{(-8-(-5))^2+(7-(-4))^2}$
$=\sqrt{(-3)^2+(11)^2}$
$=\sqrt{3^2+11^2}$

5) The set of points (x,y) such that

$x^2-2x+y^2=8$ (+1 on both sides)

"complete" the square

$(x-a)^2=x^2-a^2$

$x^2-2ax+a^2$

$9=$

$(x-1)^2+(y-0)^2=(3)^2$

$x-h$ $\quad y-k$ $\quad r$

$-2x=-2ax$

$1=a$

center $=(+1,0)$

$r=3$

Conic fact (sorta)

If the x^2 and y^2 terms have the same coefficient, CIRCLE

$45 = \frac{9}{2}$ $\frac{9}{2}$ $y = \sqrt{\frac{9}{2}} = \frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$

$$(x-1)^2 + (y-0)^2 = (3)^2$$

$x - 1 = \sqrt{\frac{9}{2}}$

$x - 1 = \frac{3}{\sqrt{2}}$

$x = 1 + \frac{3}{\sqrt{2}} = 1 + \frac{3\sqrt{2}}{2}$

$x^2 + y^2 = r^2$

(0,1) (0,0) (-1,0) (1,0)

(-2,0) (1,0) (4,0) (1,3) (1,-3)

a graph is a set of pts that . . . ≡ a Locus of pts

the eq^n of a circle centered at (h,k) with radius r

$$(x-h)^2+(y-k)^2=r^2$$

complete the square for x^2-8x+2

$(x-a)^2 = x^2-2ax+a^2 = x^2-8x+2+CS$

$(x-a)(x-a)$

$-x^2 \quad +x^2$

$-2ax+a^2 = -8x+2+CS$

$\frac{-2a}{-2} = \frac{-8}{-2}$

$a=+4$

$(x-4)^2 = x^2-8x+16 = x^2-8x+2+CS$

$14 = CS$

$(x-4)^2 = x^2-8x+2+14$

$-14 \qquad -14$

$x^2-8x+2 = (x-4)^2-14$

$x^2-8x+2=-7$

$(x-4)^2-14=-7$

$+14 \quad +14$

$(x-4)^2=+7$

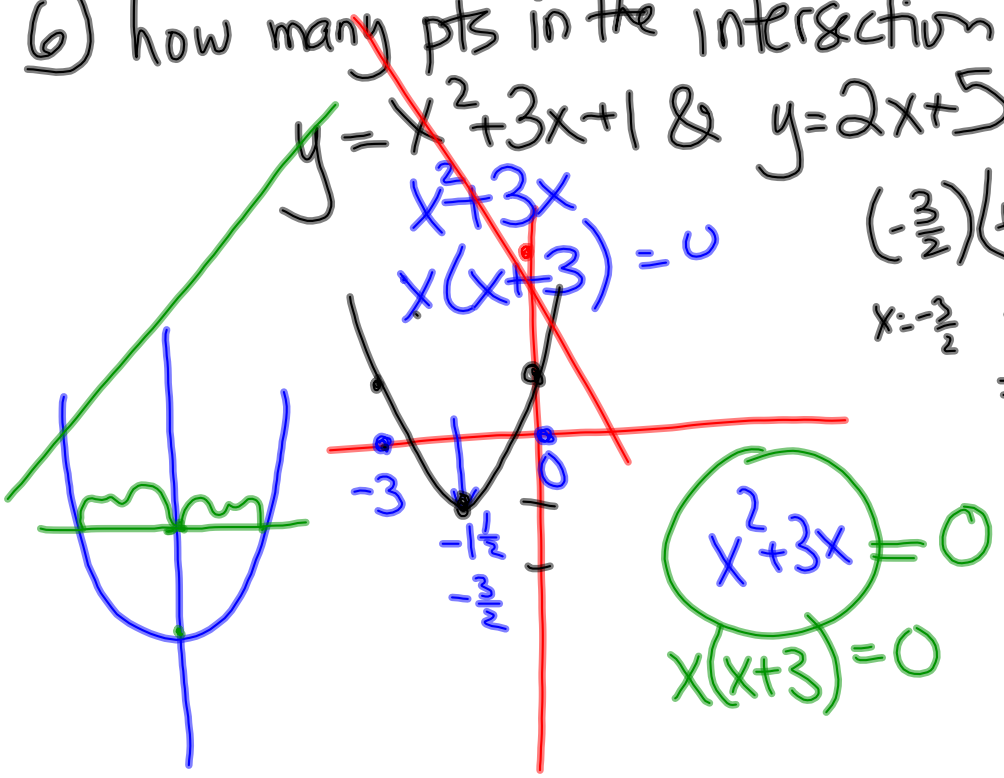
$x-4=+\sqrt{7}$

$x=4+\sqrt{7}$

$x-4=-\sqrt{7}$

$x=4-\sqrt{7}$

6) how many pts in the intersection of $y = x^2+3x+1$ & $y = 2x+5$



$(-\frac{3}{2})(+\frac{3}{2}) = -\frac{9}{4}$

$x = -\frac{3}{2}$ $-\frac{3}{2}+3 = \frac{3}{2}$

$= 3-\frac{3}{2} = \frac{3}{2}$

always have a y-intercept

sometimes have 2 x-intercepts, 1 x-intercept, 0 x-intercepts

domain $(-\infty, \infty)$

always have an axis of symmetry

The axis of symmetry is the place where I am at my lowest [or, when I am upside down, my highest]

$y = x^2 + 18$

$y = 2x = 0$

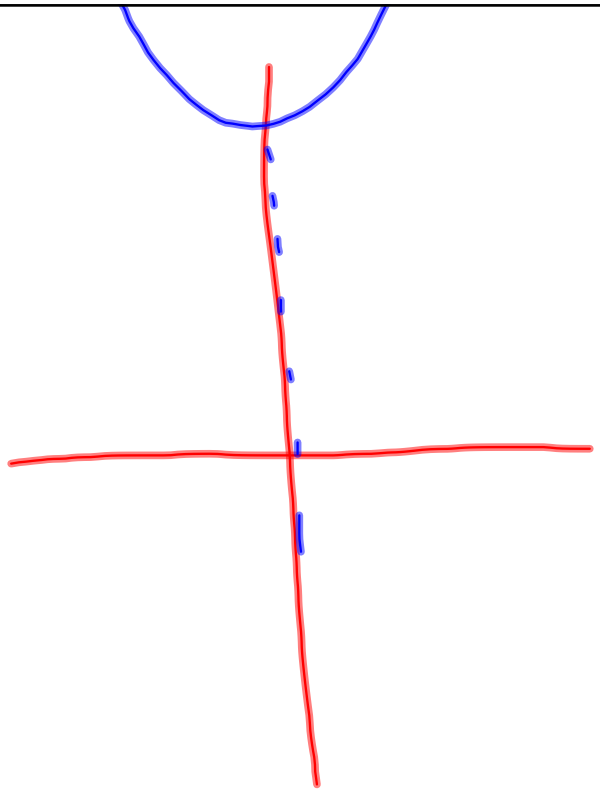
$x = 0$

$y = x^2 = 0$

$(x)(x) = 0$

$x = 0, 0$

a of S $\Rightarrow x = 0$



intersection of $y=x^2+3x+1$ = $2x+5=y$

$x^2+x-4=0$ . . .

7) all sol^{n}s of $x^2-3x+2=0$

$(x-2)(x-1)=0$

$x=+1,+2$

8) $y^2x+yx^2+128=0$

$8y^2+64y+128=0$

$8[y^2+8y+16]=0$

$8(y+4)^2=0$

$y=-4$.